

THE LEPIDOPTERA OF BURU.

PART I.—RHOPALOCERA.

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THE island of Buru (Bourou, Bouro, Boeroe) is situated approximately in lat. $3^{\circ} 18'$ to $3^{\circ} 50'$ S. and long. 126° to $127^{\circ} 15'$ E., reckoned from Greenwich. According to von Carrière it has an area of 3487 square miles, covering therefore an area about three-fourths the size of the state of Connecticut. It belongs to the Dutch Residency of Amboyna, and is divided into twelve regencies subject to the general control of a deputy appointed by the Resident of Amboyna. The deputy has his residence at Cajeli (=Kajeli = Kayeli) on the eastern coast. The port of Cajeli in 1854 was declared free to the ships of all nations.

The island is mountainous in the interior, the highest peak, Tomahoe, rising to an elevation of 8529 feet above the level of the sea. The seaboard districts are alluvial and marshy in many parts. The island is traversed by a multitude of small streams, having a short but rapid course from the interior to the sea, very few of them being worthy of being designated as rivers, except the Cajeli, or Wai Apoe, which is navigable for a short distance. In the western portion of the island is a large sheet of water, Lake Wakoholo, with a circumference of thirty-seven miles and a width of two miles, which appears to occupy the crater of an extinct volcano, at an elevation of 1900 feet above sea level. Much of the island is covered with scattering forests, and the lowlands with tall marsh grasses. The soil where cleared is fertile. Coffee and cacao are extensively cultivated. Tropical fruits abound. The principal article of export is cajeput oil, distilled from the leaves of *Melaleuca cajaputi*, which is extensively used as a panacea throughout the lands of the Malays, and possesses value as an anti-spasmodic and sudorific, and is reputed to be a specific in rheumatic affections, when applied externally.

The flora of the island is very rich. The mammalian fauna is not extensive, but interesting. The avifauna, on the other hand, is of considerable extent, and includes a number of species peculiar to the island. The natural history of Buru has received attention from a number of travellers and explorers; Forbes and Wallace being the only ones who have written at any great length upon the subject. Very little has been written upon the *Lepidoptera*. Boisduval in the *Voyage de L'Astrolabe* mentions a number of species found upon the island. Wallace in several papers describes species of his collecting as new to science, and in the papers of a number of other authors there are occasional references to species found here. The entire literature of the subject does not, however, furnish a hundred references to species distinctly known to belong to the fauna of Buru. Mr. Wallace apparently did not do very well in his collecting upon the island except among the Pieridae, Kühn failed almost entirely, and Forbes did not accomplish much. It was left to Mr. William Doherty, the intrepid naturalist explorer of the Malay Archipelago, to make the first considerable collection which has ever been made upon the island. Upon this collection, which was gathered in December of 1891 and January of 1892, the following paper is based.

With the exception of the *Tortricidae*, *Tineidae*, and *Pterophoridae*, which were sent to Lord Walsingham, the entire collection made at this time came into my possession. At intervals of leisure I have devoted to it my best efforts, and think that I have succeeded in working it out with reasonable certainty. I am especially indebted to Sir George F. Hampson for invaluable assistance rendered me in the determination of the moths, which formed a very large part of the collection.

A letter sent me by Mr. Doherty at the time he sent me the collection contains some facts which are of interest in regard to localities on the island, which he visited. He says: "Buru is assuredly a hard nut to crack. . . . Kajeli, the chief port, is a hopeless place for insects. I collected a little at Labuan Barat, not far from Wallace's place, Waiputi. But most of my work was done much farther on, on both sides of Cape Saruma, the south-eastern point of the island, at Ilat (especially), Kusu-Kusu, Poli, and Wailawa. We collected up to about 2000 feet on Mount Lumara, at the back of Ilat. From Kajeli to Ilat, my headquarters, it is two nights by 'prau.' We spent the intervening day at Labuan Barat. The weather was stormy, and the voyage most dangerous and exhausting: otherwise we had a rather pleasant though fatiguing time, and did not lose a single day's collecting. Our health was good during the whole time. The great objection to this coast is that it is all high virgin forest, wholly without paths. Pieridae are therefore scarce. The long walks were very hard on us. Generally in the morning we plodded through the loose sand of the beach, jumping the streams, till we came to some big one which we ascended for miles (each taking his own). It rained every day at 2 p.m., so that in coming back the streams were generally in flood, and we had to cross them waist-deep. Then the tide would probably be up, and we would have to walk long distances in the water. On the whole, I think, putting moths against butterflies, we did about as well as we could have in the dry season. I doubt whether any locality in Buru is better than Ilat, except the Wakoholo country, which is practically inaccessible, except for a few days' trip in light marching order, on account of the want of coolies. The people of the country I visited are Alfuros—beathen, very friendly, honest folk. They came down to the coast only a generation ago, and the interior is now quite uninhabited except at Wakoholo and on the Waijalo River (where there is absolutely no forest). At the back of Ilat is Mount Lumara, some six thousand feet high, covered with unbroken forests. Over much of this country there are island-like masses, ridges of metamorphic limestone, pierced by thousand of caves, much as in Timor or the Malay Peninsula. Apart from this the usual surface rock is micaceous sandstone, overlaying great beds of true mica-schist exactly like that in the Alps. There is coal in the west, and Mount Tomahoe is said to be volcanic." . . . "The moths were all taken by beating, or at light. Baits failed. When you think that Dr. Platen only got eighty odd species in fourteen months in Palawan, Ribbe and Kühn one hundred and fifty in Aru in twelve months, and Ribbe eighty odd in Ceram in over four months, you can see that I am sending you something quite out of the common order."

It remains to be said that the species taken by Mr. Doherty reveal a very close affinity between the fauna of Buru and Amboyna. In the determination of species much assistance has therefore been derived from the very thorough and important papers which have appeared from time to time upon the lepidoptera of the latter island from the pen of Dr. Arnold Pagenstecher, and also from the various papers of the distinguished Dutch naturalist, P. C. T. Snellen of Rotterdam.

RHOPALOCERA.

FAMILY NYMPHALIDAE Swainson.

SUBFAMILY DANAINAE Bates.

GENUS HESTIA Hübner.

1. *Hestia aza* (Boisduval), *Voyage de L'Astrolabe*, *Lepidoptera* p. 106 (1832).

The collection contains a very large series of this species, represented by both sexes.

GENUS RADENA Moore.

2. *Radena buruensis* sp. nov.

This species is very closely allied to *R. luzonica* Moore, but may be at once distinguished from it by the prevalently small size of the light spots upon the wings and the consequent enlargement of the black areas in the discal and outer marginal areas of both the primaries and the secondaries. Compared with a series of *R. luzonica*, this feature is well marked and constant, and permits of an instant discrimination of the two forms.

The collection contains a series of fifteen examples, which show almost no variation whatever in the markings.

GENUS TIRUMALA Moore.

3. *Tirumala hamata* (Macleay), in King's *Australia* II. p. 461 (1827); Moore, *Proc. Zool. Soc. Lond.* p. 232 (1883).

This species is represented by three *males*.

GENUS NASUMA Moore.

4. *Nasuma ismare* (Cramer), *Pap. Exot.* III. t. 279. f. E. F (1782); Moore, *Proc. Zool. Soc. Lond.* p. 233 (1883).

Mr. Doherty captured two *males* and two *females* of this species during his stay on the island.

GENUS ANOSIA Hübner.

5. *Anosia plexippus* (L.), *Syst. Nat.* ed. X. p. 471 (1758).

(For synonymy see Moore, *Monograph of Limnaina and Euploeina*, *Proc. Zool. Soc. Lond.* (1883), and Scudder, *Butterflies of New England*.)

The collection contains several specimens of this species in nowise differing from examples captured during the past autumn in Pennsylvania. The tendency to melanism shown in the form *erippus*, which is commonly received from the tropical portions of the American Continent, is not displayed by these specimens. They are bright in colour, like the form prevalent in the United States, and this is also true of specimens which I have received from other islands of the Eastern Archipelago and from Australia, in which the species has only recently become domiciled. This fact seems to point to the introduction of the species into the

oriental fauna by a process of emigration proceeding from the more northern portions of the American Continent. If the tendency to melanism, which is so apparent in the great majority of South American specimens, is due to climatic and specifically thermal influences, as is probable, the conformity of the specimens from the hot tropical regions of the Australian and Indo-malayan regions to the nearctic type reveals that a sufficient length of time has not yet elapsed to bring about the dusky colouration found in specimens coming from the tropical regions of the New World.

GENUS LIMNAS Hübner.

6. *Limnas petilia* (Stoll), Cramer, *Pap. Exot. Suppl.* t. 28. f. 3 (1790); Moore, *Proc. Zool. Soc. Lond.* p. 239 (1883).

Only two specimens of this species are contained in the collection.

GENUS SALATURA Moore.

7. *Salatura philene* (Cramer), *Pap. Exot.* IV. t. 375. f. A. B (1782); Moore, *Proc. Zool. Soc. Lond.* p. 242 (1883).

One *male* and two *females*.

GENUS RAVADEBA Moore.

8. *Ravadeba lutescens* (Butler), *Proc. Zool. Soc. Lond.* p. 172. f. 3 (1866); Moore, *Proc. Zool. Soc. Lond.* p. 245 (1883).

The species seems to be very common, and I received an enormous series. There is considerable variation in the extent of the light spots in the cell of the primaries, and in some specimens they tend to obsolescence. This is especially true of the *males*, but less so in the case of the *females*. The light colour of the upper surface of the wings is not so bright a yellow as is found in specimens from Batchian contained in my collection.

GENUS VADEBRA Moore.

9. *V. dohertyi* sp. nov.

♂. The wings on the upperside are deep black shading on the outer margins into warm brown, more particularly upon the secondaries. On the underside the wings are paler, the dark tint being almost wholly confined to the region of the cell, and the primaries on the inner margin being pale testaceous, or even white. The primaries are marked by four spots: one in the cell near its end, one just beyond the cell between the third median and the radial nervules, and two below this in the inner end of the interspaces on either side of the second median nervule. Of these three spots thus located beyond the end of the cell the lower one is oblong and the largest of the series. They are bluish white in colour. The secondaries have a small roundish spot at the end of the cell, and just beyond the end of the cell a curved series of five or six oblong spots in the interspaces. There is a double marginal row of spots extending from the outer angle toward the inner angle, which they do not however reach, generally terminating before the first median nervule. The outermost series of these spots shows a marked tendency to obsolescence, and in some specimens is entirely wanting.

♀. The *female* is like the *male* in colour upon the upperside, except that the light colour of the outer margins invades the inner surface of the wing to a greater depth. The primaries on the underside are marked as in the *male*, but the spots are generally a little larger, and there are two white linear streaks near the inner margin, below the first median nervule. The secondaries have the same spots as in the *male*, but the two submarginal series of spots in many specimens are either partially or now and then wholly obliterated. The discal spots are always found, though sometimes they are quite small, and at other times abnormally large.

Expanse: ♂ and ♀ 75 to 85 mm. Described from 29 ♂♂ and 17 ♀♀.

This insect has occasioned me not a little difficulty, as I naturally am reluctant to add another to the list of species in this group. At first I was inclined to identify it with *Euploea lapeyrousei* Boisduval, one or two of the *females* in my possession tallying exactly with the description given by Boisduval in the *Voyage de L'Astrolabe*. I then discovered that Mr. Moore has referred *E. lapeyrousei* to his genus *Chirosa*, one of the characters of which is a broad sericeous band on the upperside of the primaries, and states explicitly that "the type specimen of this species is much like *C. pierreti*, excepting that the sericeous streak is narrower and longer." As the insect before me is without the sexual brand on the primaries, it cannot be therefore identified as the insect described by Boisduval, whose types, now in the possession of Mons. Charles Oberthür, were consulted by both Dr. Butler and Dr. Moore in their preparation of their monographs of the *Euplocinæ*. Accepting the entire accuracy of the figure of *Vadebra melina* given by Dr. Butler in the *Proc. Zool. Soc. Lond.* 1866, p. 282, the insect before me cannot be well referred to this species, although Dr. Boisduval states that *E. melina* occurs in Burn. I likewise cannot bring myself to refer the form before me to the species named and figured as *Euploea elimena* by Cramer, and made the type of the genus *Vadebra* by Moore. While the Cramerian figures are none of the best, there is too great a discrepancy between the figure and the insects under consideration to permit me to assume their identity. I have therefore ventured to name the butterfly after its discoverer.

GENUS GAMATOBA Moore.

10. *G. spiculifera* Moore, *Proc. Zool. Soc. Lond.* p. 263 (1883).

The collection contains a small series of this fine species.

GENUS BETANGA Moore.

11. (?) *B. duponcheli* (Boisduval), *Voy. Astrol.*, *Lep.* p. 97 (1832).

This is another case in which the exceedingly brief description given by Boisduval leaves us in doubt. Mons. Oberthür, in his *Lépidoptères Océaniques*, p. 35, intimates that the insect ticketed as *Euploea duponcheli* by Dr. Boisduval, and standing in his collection, does not agree at all with the published description. He assumes that the insect labelled in the British Museum as *E. duponcheli* is correctly determined. Boisduval gives Burn as the habitat of the insect. I have before me about eighty specimens evidently belonging to the same species, *males* and *females*. Among the *females* I find several which agree very well with Boisduval's description except in one particular, which I shall point out presently.

The description given in the *Voyage de L'Astrolabe* is as follows: "Ailes d'un brun noir, plus pâle à l'extrémité, sans taches; dessous des quatries avec deux rangs de points marginaux violâtres; les supérieures ayant en outre quatre points, et les inférieures six points discoidaux violâtres. Elle se trouve à Bonron." The point of discrepancy which most puzzles me is found in the entire absence on the underside of the primaries of all my specimens, both *male* and *female*, of the outermost row of marginal spots (*points marginaux*). They are found on the secondaries according to the description above cited, but not on the primaries, where there is but one row, with only a faint suggestion in one or two specimens of the outer or strictly marginal series. Beginning with specimens which thus accord in the main with the description of Dr. Boisduval, I am able to trace a series of forms regularly intergrading until I arrive at forms in which the description given by Boisduval does not at all apply. The maculation of the underside of the wings advances step by step until we have specimens the undersides of the wings of which are covered with small white spots arranged as follows: On the primaries near the outer angle a few marginal spots, a submarginal series of spots extending from the first median interspace to the costa, three spots before the end of the cell at the inner end of the interspaces, the lowermost spot large and oblong, a round spot in the cell near its end, and a moderately large costal spot beyond the middle of the costa. On the secondaries there are three curved series of spots, a marginal and submarginal not reaching the inner angle, and a curved series of seven discal spots just beyond the cell, one on each interspace from vein 1 to vein 8, a roundish spot in the cell at its extremity, and four or five minute white spots at the base of the wing. These spots also reappear more or less (especially those of the submarginal series) upon the upperside of the wing, and thus nullify the words of Dr. Boisduval's description, which declares that the upper surface is devoid of markings. In spite of these numerous and apparently great discrepancies between the description and some of the specimens, I am inclined to think that I am right in identifying the forms before me as belonging to *B. duponcheli*. At all events no other species from Buru seems to accord more nearly with Boisduval's description.

GENUS EUPLOEA Fabricius.

12. *E. semicirculus* Butler, *Proc. Zool. Soc. Lond.* p. 269 (1866).

There is a small series of this species in which the specimens are considerably larger than specimens I have received from Batchian through Dr. Standinger, and in which the submarginal blue spots are considerably larger and more conspicuous. Otherwise there is no difference, and the insects agree well with the figures and descriptions which have been given.

GENUS CALLIPLOEA Butler.

13. *C. infantilis* Butler, *Proc. Zool. Soc. Lond.* p. 766. t. 77. f. 3 (1876).

There is one male specimen of this species which was originally described from New Guinea. It does not differ from specimens received by me from Batchian, except that the spots on the underside of the wings are a trifle smaller.

GENUS SALPINX Hübner.

14. *S. bouruana* Moore, *Proc. Zool. Soc. Lond.* p. 302 (1883).

This is the local race of *S. nemertes* Hübner, which is apparently not at all uncommon upon the island. There is a large series of specimens, both *male* and *female*, in which there is great diversity in size as well as in maculation. Some small *males*, apparently starvelings, are one-third smaller than others. Some of the *females* also greatly exceed others in expanse of wing. The submarginal spots on the upperside of the wing, and the conspicuous blue spot between veins 1 and 2 on the primaries, vary very much in some specimens, revealing a strong tendency to become suffused with white and to spread.

GENUS STICTOPLOEA Butler.

15. *S. watsoni* Moore, *Proc. Zool. Soc. Lond.* p. 322 (1883).

There is a small series of this fine insect. The *female* is much like the *male* in her markings, only varying structurally.

GENUS HAMADRYAS Boisduval.

16. *Hamadryas assarica* (Cramer), *Pap. Erot.* IV. t. 363. f. A. B (1781).
Moore, *Proc. Zool. Soc. Lond.* p. 256 (1883).

Moore in his monographic revision of the *Enploeina*, which is cited above, states distinctly that this genus is without a "sexual mark," or scent-producing organ on the forewing of the male. With this I am compelled to disagree. In the species before me, and in fact in all the other species accessible to me in my collection, *H. zoilus* (Fabr.), *H. aequirincta* Salv. & Godm., and *H. nedusia* (Hübner), the males are characterized by the presence on the inner half of the wing of a large tract of a modified scales, having well-defined limits and visible to the naked eye as lighter-coloured areas. These patches of modified scales extend from the inner margin to below the cell, and outwardly towards the external margin, which they never, however, reach. Under the microscope these tracts reveal that the scales upon them are elongated, and differ from the scales upon the rest of the wing, which are prevalently more or less orbicular. The figure given by Cramer of this species is undoubtedly that of a *female*. The *males* are not only characterized, as I have just pointed out, by the broad patch of androconia on the primaries, but by the much smaller size of the subapical spot on the primaries, which is not simply less in area than in the case of the female, but tends to translucency, giving the wing a duller colour than is the case in the opposite sex, in which the clear white contrasts boldly with the deep black of the rest of the surface.

The collection contains a large series of specimens, for the most part in good condition.

"*Hamadryas* turned out to be an *Ichomiid*, as I expected."—Doherty *in litt.*

SUBFAMILY SATYRINAE Bates.

GENUS LETHE Hübner.

17. *L. europa arete* (Cramer), *Pap. Ex.* IV. t. 313. f. E. F (1782).

This collection contains several *males* and one damaged *female*.

GENUS MELANITIS Fabricius.

18. *M. leda bouruana* subsp. nov.

The specimens of this species which lie before me are remarkable on account of the very red cast of the upper surface of the wings in the *male*, and the wide expanse of the yellow apical tract in the *female* sex. The outer margin of the primaries in the case of the *male* is also peculiar on account of the entire obsolescence of the subapical tooth-like projection, which is only discernible in one specimen as a very slight outward bend in the otherwise straight margin. Mr. Doherty tells me in his letters that this form extends to Timor and Flores. He is inclined to think it a distinct species. It is at all events fairly entitled to a subspecific name, and the brief notes I have given will easily, I think, enable students to discriminate it. Both the *males* and the *females* are highly fragrant, when first taken.

19. *M. constantia* (Cramer), *Pap. Ec.* II. t. 133. f. A. B (1779).

The figure given by Cramer is that of a *female* specimen. The *males* exist in numerous varietal forms, characterized by the greater or less prominence of the broad yellow subapical band, which in occasional specimens is almost obliterated. The subapical ocelli are also very variable in size, and tend to become obsolete. In one large *female* in the collection they have been replaced by small white points on the unusually broad yellow subapical band. This species, like the preceding, is very fragrant.

20. *M. amabilis* (Boisduval), *Voyage de L'Astrolabe*, *Lep.* p. 140. t. 2. f. 1. 2 (1832).

There is a good set of this species. The figure given by Boisduval is that of a *female*, in which the subapical band is white. It is yellow in the case of the *males*. Boisduval's figure is also too small, apparently representing a dwarfed specimen. The examples in the collection before me are likewise redder upon the upper surface than represented in the plate in the *Voyage de L'Astrolabe*.

21. *M. ribbei* Standinger, *Iris* I. p. 192. f. 1. 2 (1887).

There are a few very large *males* of this species, which is probably merely a variety of *M. velutina* Felder, characterized by its larger size, and the darker upper surface of the wings, which in the examples before me are black.

GENUS MYCALESIS Hübner.

22. *M. perseus* (Fabricius), *Syst. Ent.* p. 488 (1775).

Only a single specimen of this widely distributed species was contained in the collection.

23. *M. medus* (Fabricius), *Syst. Ent.* p. 488 (1775).

There are four specimens of this species in the collection.

24. **M. remulia** (Cramer), *Pap. Ex.* III. t. 237. f. F. G (1782).

Numerous examples.

25. **M. sirius** (Fabricius), *Lc.*

Satyrus manipa Boisd., *Voy. Astrol., Lep.* p. 150 (1832).

A good series of this species, including two *females*, which are much larger and brighter in colour than the *males*, and in which the ocelli are also larger and much more distinct.

SUBFAMILY ELYMNIINAE Herr.-Schäff.

GENUS ELYMNIAS Hübner.

26. **E. viminalis** Wallace, *Trans. Ent. Soc. Lond.* p. 328 (1869).

The specimens which I refer to the species named as above by Mr. Wallace agree quite well with his description, if based upon a *female* type. The luteous band on the margins of the wings, of which he speaks in *loc. cit.*, are conspicuous features in that sex, but not so much so in the case of the *male*, which is prevalently much darker than the *female*. The maculation on the underside of the wings is much less than in the case of *E. vitellia* (Cramer), and is almost wholly restricted in the case of the *males* to the spots at the ends of the cell on both wings, and the curved discal series of spots, which succeed these.

There are a number of *males* and several *females* in the collection.

SUBFAMILY MORPHINAE Butler.

GENUS TENARIS Hübner.

27. **T. urania** (Linnaeus), *Mus. Lud. Utr.* p. 225 (1764).

There are a few poor *males* and one torn *female* belonging to this species.

28. **T. buruensis** Forbes, *A Naturalist's Wanderings in the Eastern Archipelago* p. 411 (1883).

There are a number of this species, mostly *females*, in the collection. The description given by Forbes applies to the *female*, and apparently was founded upon a specimen of that sex. The *males* have narrow wings, prevalently light fawn-colour.

SUBFAMILY NYMPHALINAE Bates.

GENUS CETHOSIA Fabricius.

29. **C. cydippe** (Linnaeus), *Syst. Nat.* I. 2. p. 776 (1767).

Papilio ino Cramer, *Pap. Ex.* I. t. 62. f. A. B (1779).

Apparently not very common. The specimens show a tendency to melanism, and agree in this more nearly with the figure given by Cramer than with that given by Clerck.

30. *C. buruana* sp. nov.

This is the form of *C. biblis* which appears to predominate on the island of Buru. It is characterized by a marked tendency to melanism. In the *male* sex the red on the upperside of the primaries is restricted to a semicircular tract on the inner margin of the wing reaching very little if at all above the first median nervule just at its origin. The marginal, submarginal and discal lunules are almost suppressed in the majority of specimens, with the single exception of the white hastate spot between the second and third median nervules, which in all specimens is large and distinct, standing out conspicuously upon the darker ground surrounding it. The upperside of the secondaries is brighter red than the primaries. The margin is broadly black, the interspaces being adorned with the usual marginal lunules. Just after the broad black margin there is a narrow dark submarginal line. The red area of the primaries is marked by three black spots, two on the first and one on the second median interspace. The underside is much as in *C. biblis* (Drury). The *females* are darker and larger than the *males*, the red tint of the upperside of the wings being replaced in this sex by a dark shade of olivaceous brown, having a very distinct greenish cast in certain lights.

The species seems to be quite constant, and is easily discriminated by its facies from other allied forms. Inasmuch as a specific name has been given to insular varieties of this insect from numerous other localities, it has appeared to me that this form is well worthy of being treated in like manner.

The collection contains a couple of *males* and several *females*, the latter mostly in poor condition.

GENUS CYNTHIA Fabricius.

31. *C. deione* Erichson, *Nov. Act. Ac. Nat. Cur.* XVI. Suppl. t. 50.
f. 2. 2A (1833).

A large number of specimens, mostly *males*.

GENUS MESSARAS Doubleday.

32. *M. lampetia* (Linnaeus), *Mus. Lud. Ulr.* p. 286 (1764).

A large series of specimens showing great variability in size, some examples being only half as great in expanse of wing as others.

GENUS ATELLA Doubleday.

33. *A. egista* (Cramer), *Pap. Ec.* III. t. 251. f. C. D (1782).

Apparently quite common.

GENUS SYMBRENTHIA Hübner.

34. *S. hippoclus* (Cramer), *Pap. Ec.* III. t. 220. f. C. D (1782).

Only a couple of worn specimens.

GENUS JUNONIA Hübner.

35. **J. erigone** (Cramer), *Pap. Ex.* I. t. 62. f. E. F (1779).

A few good examples.

36. **J. atlites** (Linnaeus), *Amoen. Acad.* VI. p. 407. n. 72 (1764).

Two specimens.

GENUS PRECIS Hübner.

37. **P. hellanis** Felder, *Reise Nov., Lep.* III. p. 402 (1867).

A good series.

GENUS YOMA Doherty.

38. **Y. sabina** (Cramer), *Pap. Ex.* IV. t. 289. f. A—D (1782).

A large series of specimens, varying as usual.

GENUS DOLESCHALLIA Felder.

39. **D. bisaltide** (Cramer), *Pap. Ex.* II. t. 102. f. C. D (1779).

A couple of specimens in poor case.

40. **D. melana** Staudinger, *Exot. Schmett.* I. p. 104 (1888).

This is a very true species. The *female* is somewhat larger than the *male*, and the line of demarcation between the red basal portion of the primaries and the dark outer part of these wings is in this sex not quite as sharply defined as in the *male*, in which the dividing line is quite straight, as is pointed out by Staudinger in his description. The species is most nearly allied to *D. sciron* Salv. & Godm., but is abundantly distinct.

There is a small suite of specimens contained in the collection.

GENUS CYRESTIS Boisduval.

41. **C. thyonneus** (Cramer), *Pap. Ex.* III. t. 220. f. E. F (1782).

This species appears to be exceedingly common.

42. **C. paulinus** Felder, *Wien Ent. Mon.* IV. p. 247 (1860).

Only one specimen turned up.

GENUS HYPOLIMNAS Hübner.

43. **H. bolina** (Linnaeus), *Mus. Lud. Ulr.* p. 295 (1764).

The collection contains a good series of *males* and two rather poor *females* of the form named *iphigenia* by Cramer (*Pap. Ex.* t. I. 67. f. D. E). De Nicéville, in his synonymy of the species, does not quote this reference to Cramer among the known synonyms, though it is properly cited by Kirby, immediately after the citation of the following species, which, however, I cannot bring myself to regard as properly placed in the synonymy of *H. bolina*.

44. *H. lasinassa* (Cramer), *Pap. Er.* III. t. 205. f. A. B (1782).

There is a set of *males* and *females* of this species, which, when compared with the large series of *H. bolina* captured at the same time and in the same locality, leads me to disagree with the view of Kirby, that *H. lasinassa* is a mere synonym for *H. bolina*. In the first place the *male*, which superficially resembles *bolina*, differs widely from any specimens of *bolina* which I have ever seen both in size and in markings of the underside of the wings; and the vastly larger size of the *females*, and the corresponding difference in markings, all go, to my mind, to show that we are dealing with a valid form.

The expanse of the *females* of the form *iphigenia* of *bolina* taken by Doherty in Buru does not much exceed 70 mm. ; the expanse of the *females* of *H. lasinassa* is in some cases 108 mm. and never less than 95 mm. The *males* are all much larger than the largest *male* of *H. bolina* in the collection. The markings are different. In both sexes there is an entire absence of the white transverse median band on the underside of the primaries and secondaries, which is characteristic of *H. bolina*. The outer margins do not have the white markings on the fringe, which are characteristic of *H. bolina*. The marginal row of spots on the underside of the secondaries, which is geminated in *H. bolina*, is single in *H. lasinassa*. The blue discal spots on the upperside of the wings of the *males* are not centred with white, as in *H. bolina*, but are uniformly a deep purplish blue. If the two forms are sprung from the same insects, and are merely seasonal or dimorphic variations, we are confronted with one of the most remarkable facts in natural history. That they spring from one common ancestry I am quite willing to believe, and an examination of them must convince of this, but I cannot bring myself to believe that one brood of eggs will produce these two forms at the same time. They are as widely separate, for instance, as any two species of *Argynnis*, which are now recognized by naturalists as valid. Doubtless most existing species have had at some time a common ancestry, and the student of phylogeny is able often to tell where lie the lines of relationship, but relationship is not identity either in the case of individuals or species.

45. *H. alimena* (Linnaeus), *Mus. Lud. Utr.* p. 291 (1764).

There is a very large series of this species. The *males* are constant, but the *females* vary considerably. Some of the *females* are coloured upon the upperside like the *males*, others have the outer third of the secondaries laved with rufous, and still others are more or less strongly marked with white upon the secondaries.

46. *H. pandora* (Wallace), *Trans. Ent. Soc. Lond.* p. 281 (1869).

There is a small set of *males* and *females* of this fine species.

47. *H. antilope* (Cramer), *Pap. Er.* II. t. 183. f. E. F (1779).

A small series of this species, representing both sexes.

GENUS PARTHENOS Hübner.

48. *P. nodrica* (Boisduval), *Voy. Astrol., Lep.* p. 126 (1832).

A good set of this distinctly marked species.

GENUS NEPTIS Fabricius.

49. **N. heliodora** (Cramer), *Pap. Ex.* III, t. 212, f. E. F (1782).

A few good specimens.

50. **N. venilia** (Linnaeus), *Mus. Utr.* p. 290 (1764).

A large series.

51. **N. neriphoides** sp. nov.

Closely allied to *N. neriphus* Hew., from which it may be distinguished by its much smaller size, and by the fact that the submarginal brown line on the primaries is not divided, as in *neriphus*, into two parts curving inwardly at their upper extremities, but is continuous, only showing a little jag or offset on the third median nervule. Furthermore, the red linear band running the length of the cell is not serrated on its upper margin as in *N. neriphus*, and the subapical spots are not divided by the subcostal nervures as in Hewitson's species, but are fused into a curved subapical band, not very much indented internally. The general tone of the underside of both wings is decidedly lighter than in *N. neriphus*. There are two specimens of this species, both *females*. I have another specimen in my collection coming from the southern peninsula of Celebes, a *male*, which is also referable to this species, and has long stood in my collection unnamed. *Type* from Burn.

Expanse 43 mm.

GENUS ATHYMA Westwood.

52. **A. eulimene** (Godart), *Enc. Meth.* IX, p. 429 (1823).

Four *males*.

GENUS SYMPHAEDRA Hübner.

53. **S. aeropus** (Linnaeus), *Mus. Lud. Utr.* p. 256 (1764).

Several *males* and one *female*.

GENUS DICHORRAGIA Butler.

54. **D. ninus** (Felder), *Wien Ent. Mon.* III, p. 185 (1859).

One damaged *male*.

GENUS APATURINA Herrich-Schaeffer.

55. **A. erminia** (Cramer), *Pap. Ex.* III, t. 196, f. A. B (1780).

A fairly good series of the *males* of this species.

GENUS EULEPIS Moore.

56. **E. pyrrhus buruanus** Rothschild, *Nov. Zool.* V, p. 582, f. 26 (1899).

A number of *mules* and one damaged *female*.

GENUS MYNES Boisduval.

57. **M. dohertyi** Holland, *Ent. News* IV. p. 337. t. 15. f. 2. 3 (1894).

The collection contains four specimens, none absolutely perfect, of this species.

FAMILY LEMONIIDAE Kirby.

SUBFAMILY LIBYTHAEINAE Bates.

GENUS LIBYTHEA Fabricius.

58. **L. narina** Godart, *Enc. Meth.* IX. p. 171 (1819).

Two specimens.

FAMILY LYCAENIDAE Stephens.

GENUS GERYDUS Boisduval.

59. **G. leos** (Guerin), *Voy. Coquille* t. 18. f. 8. (1829).

A large species of specimens. The species seems to be very common.

60. **G. buruensis** sp. nov.

♂. The male on the upperside very closely resembles *Paragerydus horsfieldi* (Moore). The colour of the wings on this side is uniform fuscous, with a narrow streak of paler colour on the middle of the primaries. The resemblance in colour and size to this well-known Javanese species is so close that at first sight it is almost impossible to distinguish the two. On the underside the wings are marked much as in *G. chinensis* Felder, but the submarginal row of spots on the primaries is continuous along the border and does not merely extend from the costa to the third median nervule as in that species.

♀. The female is darker upon the upper surface than the male, and the usual differences in the form of the wing are observable in this sex. The streak of pale ochraceous found upon the primaries of the male is replaced in the case of the female by a small subtriangular spot of pure white.

I at first thought that this insect might be the form described by Ribbe as *ceramensis*, Iris II. p. 247, but I have finally changed my opinion, and I am also quite clear from the figure given by Standinger, Iris II. t. 1. f. 2, that it is not the species named by him as *Miletus philippus*, though some of the parts of his description might apply to it. I have therefore ventured to describe it as a new species.

GENUS SPALGIS Moore.

61. **S. epius** Westwood, in Doubl. Westw. & Hew., *Gen. Diurn.*, Lep. 11. p. 502. t. 76. f. 5 (1852).

There are several specimens in fair condition, and a number which are very poor. I cannot distinguish them from specimens coming from India and Burmah and contained in my collection. I confess that I am somewhat sceptical as to the validity of the species named *S. pharnus* Feld., of which I possess specimens, believed to be accurately determined, from Amboyna. Except for the reduced size, or occasional absence of the light spot on the upperside of the primaries, this form does not appear to me to differ greatly from *S. epius* Westwood. The markings of the underside appear to me to be identical.

GENUS HOLOCHILA Felder.

62. **H. ilias** (Felder), *Sitzber. Ak. Wissensch. Wien, Math. Nat. Cl. XL.*
p. 454 (1860).

Apparently not common.

GENUS HYPOCHRYSOPS Felder.

63. **H. anacletus** Felder, *l.c.*

Only three *females* were received. They were considerably smaller than the figure given by Felder in the Novara Reise, and a little larger than a suite of specimens coming from Amboyna, which I purchased some years ago from Dr. Standinger, and to which I added a series obtained from Messrs. Watkins & Doncaster.

GENUS PITHECOPS Horsfield.

64. **P. dionisius** (Boisduval), *Voy. Astrol., Lep.* p. 82 (1832).

Apparently quite common. The crucial test between the genus *Pithecopis* and the genus *Neopithecopis* is said by Distant to be furnished by the anastomosis of the first subcostal with the costal nervure. Tried by this test, *dionisius* comes very plainly under Horsfield's genus.

GENUS MEGISBA Moore.

65. **M. malaya** (Horsfield), *Cat. Lep. E.I.C.* p. 70 (1828).

Lycaena strongyle Felder, *Reise Novara, Lep.* p. 278. t. 34. f. 32. 33 (1865).

Apparently common, though few of the specimens sent were in good case. I think there can be no doubt of the identification made by Dr. Semper of Felder's species with that described by Horsfield. I have a large series of *M. malaya* coming from various parts of India and the Malay Peninsula. Comparing these closely with the specimens before me, which agree absolutely with Felder's figure, I am certain that so far as the underside of the wings is concerned there is no difference whatever. The only difference discernible to me is that specimens from the Asiatic mainland are all a little larger, and the white spot on the disc of the primaries is relatively a little smaller, and not quite so sharply defined as in the specimens from Burn and Amboyna in my collection. There is therefore a slight difference in facies, so far as the upperside of the wings is concerned. This is all, and not enough to warrant the specific separation of the two forms.

GENUS CYANIRIS Dalman.

66. **C. cagaya** (Felder), *Reise Novara, Lep.* p. 278. t. 34. f. 11—13 (1865).

There are several *males* and one or two *females*, which, after much deliberation, I am led to assign to this species, though the specimens do not agree with absolute exactness with the figures given by those who have represented the species. They are very close to *C. puspa* Horsf., but differ from that species in the absence in the *male* sex of the dark border of the primaries, which is greatly reduced, and in some cases almost altogether wanting. There is also very little, if any, white upon the disc of the primaries in this sex. *Cagaya* is evidently the more southern race of *C. puspa*.

67. *C. philippina* Semper, *Tygf. Philipp.* p. 168. t. 32. f. 14—18 (1889).

There is a good suite of *males* of a species, which appears to me to be the foregoing. At all events, though I could wish to be a little more certain upon this point, I can find no description of any species of *Cyaniris* which applies better to the specimens before me. Semper relies apparently more upon his plates than upon the letterpress of his work, and the few remarks he makes about this species do not throw much light upon certain points, upon which his plates fail equally to give information. The specimens before me all have a little white upon the disc of the primaries and on the costa of the secondaries. Semper says nothing about this in his description, which is, however, so meagre as to hardly merit to be called such; and the plates, which are made by a photographic process, also fail to tell us anything about this point. Blue surfaces in photography often take lighter than white surfaces. On the underside Semper's figures agree with my specimens, spot for spot, though the markings in some of the examples before me are heavier and more pronounced than they appear in the plates in the Butterflies of the Philippine Islands.

GENUS ZIZERA Moore.

68. *Z. gaika* (Trimen), *Trans. Ent. Soc. Lond.* (3). I. p. 403 (1862).

A large number of specimens of both sexes of this widely distributed form.

69. *Z. subcoerulea* sp. nov.

♂. The body is fuscous on the upperside, and is clothed with bluish hairs. The underside of the body is pale whitish grey. The legs are also whitish grey, marked with darker grey upon the outer edges of the tibiae, and on the tarsi. The palpi are white, edged below with blackish hairs. The antennae are black above, and below are ringed with white. The wings on the upperside are pale purplish blue, almost of the same tint as light-coloured specimens of *Catochrysops strabo*, but without the sheen of that species. On the costa near the base most specimens in certain lights show a white lustre. Both wings are marked by a fine blackish marginal line, within which on each interspace along the border are small innular markings, those of the primaries diffuse, and pale ashen greenish, paler than the body of the wing, rarely fuscous; those of the secondaries pale fuscous, marked inwardly and outwardly by paler grey. The fringes are grey, lighter on the secondaries than on the primaries, and distinctly interrupted at the end of each nervule by darker fuscous. On the underside both wings are pale cool grey. Both are ornamented by spots of pale brown, only a shade darker than the body of the wings, and uniformly surrounded by light whitish lines and markings. These markings are as follows: On the primaries there is a longitudinal transverse mark at the end of the cell, a discal series of spots crossing the wing from the costa to the inner margin about two-thirds of the distance from the base, one spot on each interspace, the whole series being conformed in a regular curve to the line of the outer margin. This series of spots is succeeded near the margin by a double series of innules, the spots composing the inner series being larger than those of the outer series. Both sets of innules are margined on both sides by pale grey, but in the case of the inner series this pale grey colour is extended diffusely inwardly almost as

far as the series of discal spots, giving to the wing the appearance at first sight of being crossed by a transverse whitish band. The margin is indicated by a fine dark line. The fringes are paler than on the upperside. The same markings which are found upon the primaries are continued upon the secondaries, and quite as evenly, except that the discal series above vein 6 is broken, by having the two upper spots nearest the costa shoved inwardly toward the base, being located one above the other a little before and above the end of the cell. In addition to the spots composing the three outer series there is a longitudinal transverse mark at the end of the cell, a round spot about the middle of the cell, and another small spot above it near the costa.

♀. The *female* on the underside is marked exactly like the *male*, but the primaries on the upperside are broadly dark fuscous on the costal and outer marginal areas. There is a single *female* of this species in the collection in which the entire upper surface of both wings is dark fuscous.

Expanse: ♂ and ♀ 20—25 mm.

When I originally undertook to work up the collection I provisionally referred this species to *Z. otis* (Fabr.), but a closer study has revealed the incorrectness of this procedure, and after a lengthy study of the entire subject I am compelled to believe that we are dealing here with an undescribed species. It is in size much like *Z. maha*, and suggests that species by its colouration, but the markings of the underside are wholly different. The markings do not agree with those of any other species of the genus which I have seen (and almost all of them are represented in my collection), nor with the descriptions given by authors. The pale whitish space between the discal series of spots, and the inner marginal row of lunules, and the absence of dark markings on the edge of the primaries of the *male* sex, are easily seen characteristics. The insect belongs to the second group of the genus indicated by De Nicéville, which lack the inner spot in the cell of the primaries.

GENUS LYCAENESTHES Moore.

70. *L. lycaenoides* (Felder), *Sitzber. Ak. Wissensch. Wien, Math. Nat. Cl. XI.* p. 454 (1860); ? *Pseudodipsas lycaenoides*, Felder, *Reise Nocera, Lep.* p. 258. t. 30. f. 25. ♂ (1865).

De Nicéville, *Butt. India III.* p. 128, sinks *lycaenoides* Felder, as a synonym of *Lycaenesthes emolus* (Godt.) = *bengalensis* Moore, following, with evident reluctance, the example of Hewitson. I cannot at all concur in this course. With an abundance of specimens of *L. emolus* = *bengalensis* Moore, in both sexes before me from various parts of India and Burmah, and with the figure of Felder, and a large suite of specimens of *L. lycaenoides* Felder coming from Amboyna and Buru, it is impossible to accord the correctness of Mr. Hewitson's opinion. I am also constrained to believe that the insect, which Hewitson figured as *L. lycaenoides* Felder, evidently a *female*, *Illustr. Diurn., Lep.* p. 219. t. 92. f. 39, is not Felder's insect. The *females* in my possession differ too widely from the figure of Hewitson to allow of their identification with the butterfly he depicts, though his figure is evidently very carelessly executed. If it represents the *female* of Felder's species it must be set down as a rather unfortunate attempt to follow nature.

The difference between *L. lycaenoides* Feld. and *L. emolus* (Godt.), accepting the identification of *L. bengalensis* Moore with the latter species as established, is

revealed first of all in the character of the broad submarginal band on the primaries. In *L. emolus* this band is well described by Moore as being "chain-like," whereas in *L. lycaenoides* Feld. the band is more continuous, that is to say, the light lines defining it on both sides are straighter, and the band consequently presents more even margins both externally and internally, a feature brought out in Felder's figure. Secondly, the underside of the secondaries in Felder's species has the lines and strigae somewhat differently arranged, as well as more numerous than in *emolus*. They are, moreover, as well as the whole outer margin of the wing, lighter in colour than in *emolus*, so that the wing has quite a different cast. The *female* is very different, and as no full description of this sex has apparently been given I herewith append one:—

♀. The primaries on the upperside have the costal and outer marginal areas very broadly blackish. The middle and basal areas of the wing along the inner margin are blue, darkest at the base. The blue colour extends a little upon the lower edge of the cell, and becomes lighter just beyond the lower angle of the cell. The secondaries are blue shading into brown at the base, and with the veins somewhat broadly brown. There is a submarginal and a marginal row of light lunules, the inner series fainter in colour than the outer series. The space between these two rows of lunules is fuscous. The outer row of lunules is accented externally by a corresponding series of dark triangular spaces, which toward the anal angle become a deep black. The margin is indicated by a fine white marginal line. The fringes are black, tipped with light brown, and at the extremities of veins 1, 2, and 3 are produced as short tails, tipped with white, the tail at the end of vein 2 being the longest. On the underside both wings are greyish fawn, a trifle darker at the base of the wings: the primaries at the end of the cell have a transverse short band of darker drab extending from the costa to the lower outer angle of the cell, and defined inwardly and outwardly by fine whitish lines, of which the one on the outer margin of the spot is extended upward to the costa. Beyond this spot and extending from the costa to the inner margin is a broad, rather even submarginal band of the same drab colour, bordered on both sides by fine whitish lines. There is a marginal series of confluent dark lunules, one on each interspace. These lunules, like the inner bands, are margined on either side by fine whitish lines. The margin is indicated by an exceedingly fine white line. The fringes are brown, as on the upperside. The fringes of the secondaries are dark brown tipped with lighter brown. The margin is indicated on the secondaries, as on the primaries, by a fine but very distinct white line. The marginal series of confluent lunules appearing upon the primaries reappears upon the secondaries, the triangular external spaces being darker than upon the primaries. Between veins 2 and 3 there is a conspicuous black ocellus, surmounted with a lunule of orange red and sprinkled with a few bluish scales. The middle and basal areas of the secondaries are marked by a number of short lines or strigae arranged in a very intricate manner, scarcely admitting of accurate description.

11. *L. pegobates* sp. nov.

♀. The body on the upperside is fuscous, clothed more or less with blue hairs, particularly upon the thorax. The lowerside of the body is yellowish white. The legs are white, with the tibiae edged externally with grey and the tarsi ringed with the same colour. The first and second joints of the palpi are white, the third black. On the upperside the primaries are broadly dark fuscous on the costal

and outer marginal areas. The basal area from the inner margin as far as the middle of the cell is dark smalt blue, passing into pale bluish white beyond the lower outer angle of the cell. The secondaries are pale fuscous, with the basal area in the region of the cell shot with smalt blue. This wing is crossed by a broad rather regular fuscous band running from the costa before the outer angle toward the anal angle, which it does not quite reach. The margin is indicated by two fine bluish white lines, separated by a narrow dark line. The fringes are dark fuscous, as on the primaries, but are edged with paler fuscous, and produced at the extremities of veins 1, 2, and 3 as short tails, of which the one at the end of vein 2 is the longest. All of these tails are tipped narrowly with white.

On the underside both wings are pale fawn. There is a short transverse band of slightly darker fawn running from the costa to the lower angle of the cell margined by narrow white lines. This is succeeded by a broad dark band running from the costa and retracted a short distance along the inner margin, and edged on either side with white lines. A fine white line runs from the costa toward the inner margin, bending outwardly about the middle of the wing, and coalescing with the white line which defines the broad outer band before the inner margin is reached. Beyond this line we still have two other fine white lines along the margin, separated by a narrow dark line. The fringes are uniformly fuscous. The lines and bands of the outer marginal area of the primaries are produced upon the secondaries. There is a very small and obscure ocellus between veins 2 and 3, having a black centre, surmounted by orange red. The discal and basal portion of this wing is marked by numerous fine white lines arranged in intricate patterns.

Expanse : 30 mm.

Type unique.

This species is closely allied to the preceding, but the pattern and direction of the transverse lines and bands on both sides of the wings are very different. No tendency to the breaking up of the lines and bands of the margins into lunules is revealed, and the entire facies is different. Unfortunately there does not appear to be any *male* to which I can refer this specimen—a fact for which I must express deep regret.

GENUS TALICADA Moore.

72. *T. buruana* sp. nov.

This species is closely allied to *T. arruana* Feld., from which it is easily distinguished by the fact that the *males* are very light blue on the upperside of the wings, and not dark blue as in Felder's species. Furthermore, there is an entire absence in both sexes of the dark red marking near the anal angle of the secondaries, which are characteristic of *T. arruana*. The *female* is dark fuscous on the upperside of the primaries and secondaries, with the wings shot near the base with silvery bluish white. This may be regarded as the Burnan form of Felder's species.

GENUS EVERES Hübner.

73. *E. argiades* (Pallas), *Reise* I. App. p. 472 (1771). (For synonymy compare De Nicéville, *Batt. India* III. p. 137.)

There are a few of this species in both sexes.

GENUS NACADUBA Moore.

74. **N. ardates** (Moore), *Proc. Zool. Soc. Lond.* p. 574. t. 67. f. 1 (1874).

The collection contains a number of *males*, of which all but one are of the tailless form.

75. (?) **N. aluta** (Druce), *Proc. Zool. Soc. Lond.* p. 349. t. 32. f. 6 (1873);
id., *l.c.*, p. 578. t. 32. f. 13. 14 (1895).

It is with some doubt that I refer two specimens in the collection to this species. They are smaller than they ought to be to agree with the account of the species given by Mr. H. H. Druce, and are darker blue on the upperside than represented in his figure.

76. **N. ancyra** (Felder), *Reise Novara, Lep.* p. 276. t. 34. f. 5 (1865).

A few *males* of this species.

77. **N. beroe** (Felder), *Reise Novara, Lep.* p. 275. t. 34. f. 36 (1865).

A large number of *males* and three poor *females*, which I refer to this species.

78. **N. albofasciatus** (Röber), *Iris* I. p. 65. t. 4. f. 21. ♂ (1885).

Röber describes and figures the *male*. The collection before me contains no *male* specimens, but two *females*, which agree so closely on the underside with the figure given by Röber that I am constrained to refer them to this species. They are unlike any other insect in the genus known to me, and I believe my determination to be correct.

79. **N. cladara** sp. nov.

♂. The body is fuscous, more or less clothed with blue hairs on the upperside. The thorax and legs are quite dark, the abdomen on the underside is pale grey. The palpi are black. The antennae are black, slightly ringed with white on the underside. The wings on the upperside are pale morpho-blue, somewhat clouded in certain lights with pale brown at the base. Both are margined with a fine black line, and the primaries are very lightly edged in addition with fuscous on the margin, most noticeably near the apex. There is a minute black spot near the anal angle. On the underside the wings are sordid brown, becoming darker toward the base, where they are almost black. The primaries have a transverse band on the middle of the cell produced beyond it as far as the first median nervine, another similar band closing the end of the cell, and beyond this running from the costa to the submedian nerve a catenulate band bent outwardly opposite the cell. All of these bands are margined with fine whitish lines, and are a shade darker than the adjacent parts of the wing. In addition, there is on the primaries a double row of marginal lunules, also bordered on either side by pale diffuse lines. The secondaries on the underside are furnished with a subbasal curved series of spots like those on the primaries, running from the costa to the inner margin. The cell is closed by a fine whitish line, defined externally by a darker band of the same length, which is followed by an irregularly curved series of dark markings, the spots opposite the end of the cell being thrust outwardly and the pale lines

defining them coalescing with a series of lines running from the outer angle to the third median nervule. The double series of lunules appearing on the primaries is produced upon the secondaries, but between veins 2 and 3 is interrupted by a conspicuous black ocellus, surmounted with a red lunule, and having a few iridescent bluish green scales on its outer margin; there are also two similar, but much smaller, black spots at the anal angle, likewise ornamented with bluish green scales.

Expanse : 25 mm.

Described from three male specimens.

80. *N. poecilta* sp. nov.

♂. The upperside of the body is dark fuscous, clothed with pale blue hairs; the lowerside of the body and the legs are blackish. The abdomen on the lowerside is narrowly marked with pale grey. The palpi are black. The antennae are black, ringed with white on the lowerside. Both wings are very pale violet-blue, in certain lights having a pale brown cast, especially about the base. The margin of both wings is defined by a very fine black line. The fringes are white, checked with fuscous at the ends of the nervules. At the end of vein 2 on the secondaries there is a short tail, fuscous, tipped with white. On either side of the extremity of the same vein are two small dark spots, narrowly edged outwardly by fine white lines. On the underside the wings have the outer margin pale grey, almost white, with the discal and basal areas broadly suffused with dark mouse-grey. The primaries are marked by three transverse bands of dark blackish brown, defined inwardly and outwardly by light lines, which on the costa are represented by small very distinct white spots. These bands are: 1st, a subbasal band extending from the costa across the cell to the submedian nerve; 2nd, a discocellular band, covering the end of the cell; and 3rd, a catenulate discal band, running from the costa to the submedian nerve. In the latter band the three spots, which are opposite the cell, are somewhat dislocated, and pushed forth in the direction of the outer margin. There is a double series of pale grey lunules along the margin, irregular in size, the upper one of the outer series at the apex being the largest and quite conspicuous, those about the middle of the margin tend to become obsolete. The secondaries on the underside are crossed by a basal curved catenulate band, by a discocellular bar, followed closely by an irregularly curved discal catenulate band. All of these bands are dark blackish brown, and the maculae composing them are edged with lighter colour. There is a double row of rather irregular marginal lunules, grey in colour, edged with white. Between veins 2 and 3 there is a conspicuous ocellus, surmounted with an orange-red lunule, its deep velvety black central spot marked externally by a very fine lunette of bluish green. Another very small ocellus is situated at the anal angle.

Expanse : 26 mm.

There is a single specimen of this species in the collection, marked by Mr. Doherty "*Nacaduba*, species incerta." I have another specimen in my collection coming from Amboyna, and purchased by me several years ago in a lot of Amboynese material. In the Amboynese example the ground colour is somewhat paler, and the outer margins are broadly whitish. In consequence the transverse markings stand forth much more conspicuously in this specimen. This thing I at one time thought was the hitherto undescribed and unfigured male of *N. palmyra* Feld, the words in Felder's description (*Sitzber. Ak. Wiss. Wien, Math. Nat. Cl.*

XL. p. 458), "*alis caudatis, ciliis albis, fusco intersectis*," seeming to furnish a clue. So far as my observation goes, the only *Nacaduba* to which these words apply is the species before me. I do not know *N. palmyra* Feld., save by his description and the figure, which is that of a female, and wholly unlike the insect above described, if the text and plate are safe guides.

81. *N. glenis* sp. nov.

♀. The body on the upperside is black, more or less clothed with bluish hairs; on the underside the body is pale grey. The legs are whitish, streaked and ringed with grey. The first and second joints of the palpi are white, the third joint is black. The front is white. The antennae are black, ringed below with white. The wings on the upperside are dark fuscous, shading on the costa of the primaries and the outer margins of both wings into black. Both wings at the base are shot with royal purple, only visible in certain lights. On the underside both wings are broadly yellowish ochraceous. The primaries have a discocellular brown bar, edged on both sides by fine pale yellow lines; a discal catenulate transverse band, bowed out before the end of the cell, and running from the costa to the submedian nerve, the spots composing it coloured and defined as the bar at the end of the cell. In addition there is a double series of submarginal fuscous markings defined on both sides by light poorly defined lines. The inner row of these markings is very uniform in size, more or less quadrate, and larger than those composing the outer row, which are small and distinctly lunulate. The fringes are dark fuscous. The secondaries on the underside have a subbasal series of three subquadrate spots, a discocellular bar, and a discal curved series of spots, all of which are defined more or less sharply on both sides by pale yellow lines. The double series of marginal markings of the primaries is continued upon the secondaries. The inner row is strongly accentuated on the side toward the base by broad, pale yellowish transverse lines or bands, the outer row of lunules is composed of spots gradually increasing in size from the outer angle, until they culminate in a large ocellus, between veins 2 and 3. The two spots antecedent to this ocellus are distinctly ocelliform. The large ocellus is black, ringed with yellowish, and without any blue-green scales. There are two minute black lunular markings at the anal angle.

Expanse 25 mm.

Type unique.

There is no *male* in the collection corresponding to this insect, and, so far as I know, there is nothing just like it which has hitherto been described or figured. The broadly yellowish ochraceous tint of the underside is very characteristic.

GENUS JAMIDES Hübner.

82. *J. astraptus* (Felder), *Sitzber. Ak. Wissensch. Wien, Math. Nat. Cl.* XL. p. 456 (1860).

A large series of *males* and *females*. Apparently very common.

83. *J. porphyris* sp. nov.

♂. The primaries on the upperside have the outer margin somewhat narrowly edged with black; the secondaries have the costal, outer and inner margins very

broadly margined with black ; the remainder of the upper surface of the wings is very deep royal purple, with little or no sheen. On the underside I am unable to distinguish the markings of this species from those of *J. astrartes* and those of *J. bochus*, except that the ground colour of the wing is a paler whitish grey.

♀. The *female* is marked on the underside like the *male*. On the upperside the wings are very broadly black, being merely shot lightly at the base with royal purple. The secondaries have the outer margin defined more or less distinctly toward the anal angle by a fine white line, above which are three or four small spots, darker than the adjacent parts of the wing.

Expanse ♂ 18—25 mm., ♀ 28 mm.

Described from numerous *males*, one *female*.

GENUS LAMPIDES Hübner.

84. **L. hylas** (Cramer), *Pap. Exot.* IV. t. 363. f. E. F (1782).

Apparently very common.

85. **L. celeno** (Cramer), *l.c.* I. t. 31. f. C. D (1775).

A few specimens.

86. **L. aratus** (Cramer), *l.c.* IV. t. 369. f. A. B (1782).

Apparently not uncommon.

87. **L. callinicus** (Röber), *Iris* I. p. 58. t. 4. f. 15 (1884).

What I take to be this species is represented in the collection by a few *males* and more numerous *females*.

88. (?) **L. nemea** Felder, *Sitzber. Ak. Wiss. Wien*. XL. p. 455 (1860).

It is with some doubt that I refer the two specimens before me to this species.

89. **L. buruana** sp. nov.

♂. The *male* on the upperside has much the appearance of *L. aratus* Cram., but the wings on the upperside of the primaries in particular are overshot with a deeper blue iridescence, the outer margin of the primaries is more heavily edged with dark fuscous, and the subbasal dark band of the underside shows through upon the upperside as a pale dark band parallel to the outer margin. The secondaries on the upperside have the margin distinctly defined by a black line, followed by a row of marginal lunules, surrounded with white, the one between veins 2 and 3 being distinctly ocelliform. This row of lunules is succeeded inwardly by a submarginal row of dark fuscous spots, more or less quadrate in form. On the underside the wings are pale fawn crossed by white lines, the arrangement of which is simpler than in *L. aratus*, the most striking difference being the fact that on the primaries the two lines at the end of the cell are continued directly as parallel lines to the submedian nerve. These lines are succeeded by two parallel curved subapical

lines, the innermost reaching to the second median nervule and the outermost to the third median nervule. There is a broad submarginal band of quadrate dark spots, and a marginal series of lunules, both bordered inwardly quite broadly with white, the margin is indicated by a fine white line followed externally by a fine but very distinct black line. The fringes are fuscous, tipped with white. The secondaries have the marginal markings of the primaries continued upon them, the series of lunules being interrupted by a large ocellus, between veins 2 and 3, deep black, surmounted by a lunule of orange-red, and irrorated with bluish green scales. The discal and basal areas are crossed by five transverse lines, broken on vein 6, and all tending to unite by their lower extremities at a point about the middle of vein 2. On the inner margin there are three parallel short lines running from vein 2 upwardly in the direction of the insertion of the wing.

♀. The *female* is much like the *male*, but all the markings are heavier and more distinct, and the upper surface of the wings lacks the bluish sheen of the *male*, being more milky white. Furthermore the apical area of the primaries on the upperside is somewhat broadly laved with dark fuscous.

Expanse ♂ 28—32 mm., ♀ 25—33 mm. Described from six *males* and six *females*.

I reluct at describing another species in this genus, in which the differences are often found to reside merely in a shade of colour, or the arrangement of a few lines in the underside of the wing, but in this case the specimens before me are so constant in their markings and are so totally distinct in their facies from any other species known to me, that I am compelled to regard them as, if not a distinct species, at least representing a well-defined local race. There is nothing exactly like them so far as I can see which has been described or figured elsewhere.

GENUS CATOCHRYSOPS Boisduval.

90. **C. strabo** (Fabricius), *Ent. Syst.* III. 1. p. 287. n. 101 (1793).

Apparently common. The specimens are all relatively small, much less in expanse of wings, than the specimens of the following species, which I think is surely only a dimorphic form of the *male*, but which I still allow to stand until we shall have this surmise proved by the experiment of breeding.

91. **C. lithargyria** (Moore), *Ann. Mag. Nat. Hist.* (4). XX. p. 340. (1877).

This is certainly not specifically distinct from the foregoing species, and will no doubt turn out, when the test of breeding is applied, to be the dimorphic *male* of *C. strabo*.

Very common. The *females* are not separable from those of *C. strabo*, if the *females* enclosed in the same envelopes with *lithargyria* are certainly the *females* of this form, which I believe that they are.

92. **C. cnejus** (Fabricius), *Ent. Syst. Suppl.* p. 430 (1798).

Not at all scarce.

GENUS AMBLYPODIA Horsfield.

93. **A. anna** Standinger, *Exot. Tagf.* I. p. 282 (1888).

The collection contains two *males* and three *females* of this species, not all quite perfect.

GENUS ARHOPALA Boisduval.

94. *A. carolina* sp. nov.

♂. This species belongs to the *anthore* group, and comes in some respects quite near *A. polita* Röber, but may at once be distinguished from that species by the arrangement of the spots on the underside of the secondaries, which instead of being more or less rotund, as in *A. polita*, are elongated transversely, giving the wing a barred appearance.

♀. The *female* is like the *male*, but lacking much of the purple gloss on the costal and apical tracts of the primaries, which are margined with plain black, broadly on the margin at the apex, the black band narrowing gradually until it vanishes at the outer angle.

Expanse ♂ and ♀ about 40 mm. Described from five *males* and one *female*.

95. *A. fulla* Hewitson, *Cat. Lye. B. M.* p. 10. t. 6. p. 67, 68 (1862).

Hewitson describes and figures the *male*. The *female* is exactly like it on the underside, but is distinguished upon the upperside by having the costae of both wings as well as the apex of the primaries broadly dull black, and the outer margins of both wings of the same colour.

The collection contains a large number of *males*, but only two *females*.

96. *A. buruensis* sp. nov.

♂. The upperside of both wings is uniformly dark purplish blue, with the external border of the primaries quite narrowly bordered with black-fuscons. On the underside both wings are ochraceous-fuscons crossed with darker spots and bands, which are bordered narrowly, especially on the secondaries, with fine lighter lines. These spots and bands are very little darker than the body of the wings, and in certain lights are rather obscure. They are disposed as follows:—Upon the primaries there is a faint submarginal band running from the costa to the inner margin; this is followed by a catenulate discal band rather more distinct than the first mentioned, and extending from the costa to the submedian nerve; the cell is closed by a short discocellular bar: there is a circular spot in the middle of the cell and a small and obscure spot on either side of the first median nervule at its origin below the cell. On the secondaries there are three small spots increasing in size from the side of the base toward the outer margin, and equidistantly located just below vein 8: a small spot in the cell near the base, one in its middle, and a short transverse bar at the end of the cell; an irregular catenulate curved band of spots marks the disc, below the cell and along the inner margin are a few transverse pale lines. The outer third of the wing is free from maculations, except about the anal angle, which is rather conspicuously marked with whitish curved striae, and dark lunules, three in number, irrorated with bluish green scales.

♀. The *female* on the underside is marked exactly like the *male*, the chief difference between the two sexes in the matter of their markings being the fact that on the primaries the *female* has the costa and the apical area broadly velvety black, the line of demarcation between the blue ground colour and the black space being almost straight from a little beyond the base to the outer extremity of the third median nervule. The outer margin is also in this sex somewhat broadly black upon the primaries.

Expanse ♂ 32—36 mm., ♀ 30 mm.

Described from five *males* and one *female*.

This species is very near to *A. kounga* Druce from Borneo, but differs in having the primaries more acute, and in the entire absence of all markings from the outer third of the secondaries on the upperside before the outer angle. These points will serve among others to discriminate it from Druce's species, as well as from others.

GENUS HYPOLYCAENA Felder.

97. **H. sipylus** (Felder), *Sitzber. Ak. Wissensch. Wien, Math. Nat. Cl.*
XL. p. 451 (1860).

Quite common.

GENUS DEUDORIX Hewitson.

98. **D. epijarbas** (Moore), in Horsfield & Moore, *Cat. Lep. Mus. E. I. C.*
p. 32 (1857).

A few *male* specimens.

GENUS BINDAHARA Moore.

99. **B. isabella** (Felder), *l.c.*

A number of *males* and a couple of poor *females*.

GENUS HYPOCHLOROSIS Röber.

100. **H. buruana** sp. nov.

♂. This species appears to be an intermediate form between *H. antipha* Hew. and *H. lorquini* Feld. The *male* has the discal areas of both wings on the upperside white margined more or less with pale diffuse blue, passing over into the deep black of the outer margin and the dark fuscous of the base. On the underside there is a total absence of the dark discal markings on the secondaries figured by Hewitson as occurring in the case of *H. antipha*.

♀. The *female* is without any blue on the upperside of the wings.

There is a small series of this beautiful insect, which can easily be discriminated from the other two species by the points of difference pointed out above.

FAMILY PAPILIONIDAE Leach.

SUBFAMILY PIERINAE Swainson.

GENUS ELODINA Felder.

101. **E. bouruensis** Wallace, *Trans. Ent. Soc. Lond.* (3). IV. p. 319 (1867).

Two examples, one badly shattered.

GENUS TERIAS Swainson.

102. **T. drona** Horsfield, *Cat. Lep. E. I. C.* p. 137. t. 1. f. 13 (1829).

A few specimens

103. **T. hecabe diversa** Wallace, *Trans. Ent. Soc. Lond.* (3). IV. p. 324 (1867).

Not uncommon.

104. **T. tilaha** Horsfield, *Cat. Lep. E. I. C.* p. 136 (1829).

A few specimens.

105. **T. candida** (Cramer), *Pap. Exot.* IV. t. 331. f. A (1782).

A good set of specimens of both sexes.

GENUS APPIAS Hübner.

106. **A. bouruensis** (Wallace), *Trans. Ent. Soc. Lond.* (3) IV. p. 379 (1867).

The collection contains a single *female* answering exactly to the description given by Wallace, and another which is exactly like it, except that the red spaces on the wings are replaced by yellowish white, showing that this sex is distinctly dimorphic. The light-coloured *female* agrees very well with the figure of *T. fatima* Vollenhoven, *Tijdschr. v. Ent.* p. 59. t. 2. f. 1. 2 (1865), except that the discal bands of light colour on both wings are much broader in the insect before me than they are in the figure of *T. fatima*. Mr. Doherty writes as follows as to this species: "Of *T. bouruensis* Wall. I unluckily caught no *male* (one was seen just like *zarinda* in appearance), so that you cannot compare it with *zarinda*. As it happened, I got two *females*, one white, the other red. The white form is probably *T. fatima* Voll. In the small set I got in the Celebes there are two similar forms."

107. **A. jacquinoti** (Lucas), *Rev. et Mag. Zool.* p. 326 (1852).

Two poor *males*, three fairly good *females*.

108. **A. ada** (Cramer), *Pap. Exot.* t. 363. f. C. D (1782).

A very large series of this species, composed of both *males* and *females*, is contained in the collection.

109. **A. paulina** (Cramer), *l.c.* II. t. 110. f. E. F (1779).

A large number of *males*, only one *female*.

110. **A. albina** (Boisduval), *Spec. Gen.* I. p. 480 (1836).

A few tattered *males*, and several *females* in better case. This is quite distinct from *T. jacquinoti*. I must dissent from Mr. Kirby, who has sunk the latter species as a synonym of *T. albina*. The *females* as well as the *males* differ widely in the two species.

111. **A. eliada** (Hewitson), *Ex. Butt.* II. Pieris, t. 4. f. 27. 28 (1861).

A few *males* only were taken.

GENUS HUPHINA Moore.

112. **H. jael** (Wallace), *Trans. Ent. Soc. Lond.* (3). IV. p. 335 (1867).

A very large series of specimens of both sexes. There is some variation in size and in the intensity of the markings in the specimens before me. I am unable to see any great difference between this form and *H. olga* Esch.

GENUS DELIAS Hübner.

113. **D. philotis** (Wallace), *l.c.* p. 357 (1867).

A few *males* and two *females*.

114. **D. echo** (Wallace), *l.c.* p. 358. t. 8. f. 3. ♀ (1867).

Four *males*, no *females*.

115. **D. rothschildi** sp. nov.

♀. Near *D. dorimene* (Cram.), from which it differs by having the spots on the underside of the primaries smaller, and confined wholly to the apical tract. The outer marginal band on the secondaries is broader than in *dorimene*, and the yellow spots contained within it are also much larger. They are pyramidal with their apices pointing inwardly, and only the spot at the anal angle is divided. The ground colour of the secondaries on the underside is bright yellow, laved somewhat with orange. On the upperside of the *female* specimen before me the primaries are black, except for a short distance along the inner margin at the base, where they are white shading inwardly into bluish fuscous. The secondaries are white, very broadly and evenly bordered with deep black, this broad outer black marginal band being accentuated inwardly by a narrow band of bluish fuscous.

Expanse: 64 mm.

The type, which is unique, is not in very good condition, but what one wing lacks the other supplies.

GENUS ERONIA Hübner.

116. **E. iobaea** (Boisduval), *Noy. Astrol., Lep.* p. 57. t. 3. f. 5. 6 (1832).

A single *male* specimen.

GENUS CATOPSILIA Hübner.

117. **C. catilla** (Cramer), *Pop. Ex.* III. t. 229. f. D. E (1782).

A single *female*.

118. **C. crocale** (Cramer), *l.c.* I. t. 55. f. C. D (1779).

One *male*, three *females*.

GENUS HEBOMOIA Hübner.

119. **H. leucogynia** (Wallace), *Journ. Ent.* II. p. 4. t. 1. f. 1. 2 (1863).

There is a good series of the *males*, and several *females*, only a few of which are in quite perfect condition.

SUBFAMILY PAPILIONINAE Swainson.

GENUS TROIDES Hübner.

120. **T. oblongomaculatus bouruensis** (Wallace), *Trans. Linn. Soc. Lond.* XXV. p. 38 (1865).

The collection contains a dozen pairs of this insect, in which there is considerable variation shown both by the males and the females, particularly by the latter. The chief variation in the male sex is in the extent of the black marking at the base and on the inner margin of the secondaries. In some specimens the black of the inner margin extends inwardly as far as the lower edge of the cell and to vein 2; in others it does not touch the lower edge of the cell nor nearly reach vein 2, in one case not extending much beyond vein 1. In a single specimen before me the inner marginal black area is pushed into the body of the wing almost to vein 3. The black at the base extends outwardly upon the cell in the majority of specimens only to about half its length, but in two cases it reaches almost to the end of the cell. The clear yellow discal patch on the disc of the wings is thus, as Mr. Wallace pointed out in his description, "variable in form and extent." One of the specimens agrees perfectly with Rippon's figure of *T. papuensis*, recently published. The females vary greatly in size and in the amount of the light colour on the primaries, as well as in the form and extent of the light colour on the secondaries, and of the black spots. The smallest female has an expanse of wing of 140 mm., the largest of 168 mm. Some specimens have very faint light line on either side of the nervules, others have the whole discal area at the end of the cell pale buff, intersected by the black lines of the veins alone. These constitute "merkwürdige Aberrationen," for which German dealers are in the habit of charging high prices, which I judge not to be at all uncommon in good sets of specimens of this and many of the allied species.

121. **T. hypolitus** (Cramer), *Pap. Ec.* l. t. 10. f. A. B. and t. 11. f. A. B (1775).

The collection contains a good set of the *males* and three *females* of this species, rather larger than specimens generally received from other localities, so far as my observation shows.

GENUS PAPILIO Linnaeus.

122. **P. polydorus** Linnaeus, *Amoen. Acad.* VI. p. 407. n. 59 (1763).
A large set of specimens.

123. **P. fuscus** Goeze, *Ent. Beytr.* III. l. p. 87 (1779).
A few good specimens of both sexes.

124. **P. gambrisius buruanus** Rothschild, *Nov. Zool.* IV. p. 181. n. 4 (1897).
A few *males*.

125. **P. ulysses** Linnaeus, *Syst. Nat.* ed. X. p. 462. n. 20 (1758).
A good set of *males*, and a few *females*, not in the best condition.

126. **P. deiphobus** Linnaeus, *l.c.* p. 459. n. 6 (1758).

One male.

127. **P. sarpedon anthedon** Felder, *Verh. Zool. Bot. Ges.* XIV. p. 395. n. 217.
p. 359. n. 124 (1864).

A good set of *males*; no *females*.

128. **P. eurypylus** Linnaeus, *Syst. Nat.* ed. X. p. 464. n. 37 (1758).

A few specimens.

129. **P. macfarlainei** Butler, *Proc. Zool. Soc. Lond.* p. 471. n. 39 (1877).

Papilio aegistus Cramer (*non* Linné), *Pap. Exot.* III. p. 81. t. 241. f. C. D (1782).

Apparently not very common.

130. **P. agamemnon plisthenes** Felder, *Reise Novara, Lep.* p. 79. n. 53 (1865).

Common.

131. **P. codrus** Cramer, *Pap. Ex.* t. 179. f. A. B (1779).

Two specimens.

FAMILY HESPERIIDAE Leach.

GENUS CASYAPA Kirby.

132. **C. corvus** (Felder), *Sitzber. Ak. Wissensch. Wien, Math. Nat. Cl.*

XI. p. 469 (1869); *id.*, *Reise Novara, Lep.* t. 73. f. 2 (1867).

Chaetocneme cerinthus Felder, *l.c.* ♀.

This species seems to be very common in Buru. There is some variation among the *males* in the length and distinctness of the pale yellow subapical band, and in one specimen it is almost obsolete. The same remark holds true of the band in the *female*, which in several specimens is somewhat reduced, and in one or two instances has the outer extremity near the outer margin separated from the remainder of the band, and set off as a triangular spot.

GENUS TAGIADES Hübner.

133. **T. japetus** (Cramer), *Pap. Ex.* IV. t. 365. f. E. F (1782).

A few specimens.

134. **T. martinus** Plötz, *Jahrb. Nass. Ver. Nat.* XXXVII. p. 47 (1884).

One specimen, which is a *male*.

GENUS SEPA Nicéville.

135. **S. noctis** (Staudinger), *Iris* II. p. 143 (1889).

A single *male* specimen.

GENUS NOTOCRYPTA Felder.

136. **N. feisthameli** (Boisduval), *Voy. Astrol., Lep.* p. 159. t. 3. f. 7 (1832).
Plesioneura chimaera Plötz, *Berl. Ent. Zeitch.* p. 262 (1881); Pagenst., *Jahrb. Nass. Ver. Nat.* XXXVII. p. 211. t. 4. f. 1 (1884).

This species was originally described by Boisduval from specimens coming from Amboyna and Burn, and the form found in this part of the Indo-malayan region may be taken therefore as typical. The figure given by Boisduval is quite characteristic. There is some variation in the number of the subapical spots, the *male* specimens before me all have these spots exceedingly minute, the one between veins 4 and 5 alone being distinctly observable, though quite small, the others requiring a glass to bring them into view. In the *females* the spots below the apex are more distinct. I cannot separate *N. chimaera* Plötz from the typical form. The figure given by Pagenstecher is that of a *female*. Specimens just like it are contained in the collection made by Doherty; and compared with the long series of *N. feisthameli* in my collection from all parts of the Indo-malayan region, I see no possible reason for the separation of the insect described and figured by Plötz and Pagenstecher from its fellows. *Chimaera* is an absolute synonym of *feisthameli*.

GENUS TELICOTA Moore.

137. **T. augias** (Linnaeus), *Syst. Nat.* I. p. 794 (1767).

Three poor *males*.

138. **T. bambusae** (Moore), *Proc. Zool. Soc. Lond.* p. 691. t. 45. f. 11. 12 (1878).
 Apparently scarce.

139. **T. prusias** (Felder), *Sitzber. Ak. Wissensch. Wien, Math. Nat. Cl.* XLIII. p. 44 (1861).

Only three specimens, notably darker on the underside than specimens coming from Amboyna and Batchian contained in my collection, agreeing in this with specimens coming from New Guinea and Northern Australia.*

140. **P. palmarum** (Moore), *Proc. Zool. Soc. Lond.* p. 690. t. 45. f. 6. 7 (1878).
 A good series of *males*, but no *females*.

141. **T. dara** (Kollar), in Hügel's *Kaschmir* IV. p. 455 (1848).

I accept, in the attitude of one who desires more light, the synonymy of this species as recently worked out by Elwes in the Transactions of the Zoological Society. Perhaps it is correct to gather together under the name given by Kollar the various forms described by other writers, and I am willing for the time to let it be so, but my critical sense rebels in a measure against the procedure. The specimens before me as I write were originally determined by me as belonging to *macroides* Butler, but are larger and brighter than specimens coming from India, Burmah, and other more northern localities, and contained in my collection.

* It is worth noting just here that *T. simplex* Elwes, *Trans. Zool. Soc. Lond.* vol. XIV. p. 253. t. 19. f. 15. is identical in every respect with the insect described by me in the *Proc. Bost. Soc. Nat. Hist.* XXV. p. 79. t. 4. f. 4, as *Telicota subrubra*. I do not wonder that Mr. Elwes, with the wretched caricature given in the plate, which is a reproduction of a photograph, was unable to recognize it.

It is worthy of remark that *Pamphila omaha* Edwards, = *mingo* Edw., of which latter the type is in my collection, is apparently identical with *T. maesoides* Butler, which Elwes sinks as a synonym of *T. dara* (Kollar). There is some doubt as to the origin of the types of *P. omaha*. The specimens described as *P. omaha* came from the collection of the late Mr. Newman of Philadelphia, and were ticketed "Pike's Peak, Colorado." After writing his description, Mr. Edwards returned the specimens to their owner. Subsequently he re-described the species under the name *mingo*, basing his description upon a specimen said to have been taken in Kanawha County, West Virginia. This is the specimen standing in my collection. The specimens originally described as *P. omaha* by Edwards are believed to be the ones now standing in the collection of the American Entomological Society in Philadelphia. They are mounted on common pins. The type of *mingo* is mounted on an insect pin. Mr. Edwards writes me that it was certainly collected in Kanawha County, West Virginia. It is very singular that, since W. H. Edwards wrote his original descriptions, not a single specimen of this insect has turned up in the United States, so far as can be ascertained. I should not hesitate to say that by some accident the insects in the Newman collection had been mislabelled, and that this exceedingly common Oriental butterfly had been inadvertently allowed to become mixed up with a lot of "stuff" from Colorado. The only difficulty arises from the positive statement of Mr. Edwards that the type of *mingo* was taken in West Virginia. I dislike to think him mistaken, but until we obtain more specimens from somewhere within the bounds of the United States I shall be inclined to believe that *omaha* (= *mingo* = *maesoides*) is not an American species, but belongs to the Indo-malayan fauna.

GENUS PARNARA Moore.

142. **P. mathias** (Fabricius), *Ent. Syst.*, Suppl. p. 433 (1798).

A few specimens.

143. **P. philippina** (Herrich-Schaeffer), *Prod. Syst., Lep.* III. p. 81 (1869).

A good lot of specimens, mostly *males*.

GENUS HASORA Moore.

144. **H. celaeus** (Cramer), *Pap. Ex.* IV. t. 393. f. A. B (1782).

Numerous specimens, principally *males*.

145. **H. thridas** (Boisduval), *Voy. Astrol., Lep.* p. 161 (1832).

This species is very near to *H. celaeus* (Cramer), and is only distinguished from it by the lighter blue-green colour of the underside of the wings, and the bright buff of the body on the lowerside.

146. **H. doleschalli** (Felder), *Sitzber. Ak. Wissensch. Wien, Math. Nat. Cl.*

XL. p. 460 (1860).

A few good specimens.

147. *H. chromus* (Cramer), *Pap. Ec.* III. t. 284. f. E (1782).

The specimens before me are all of the form described by Felder under the name *malayana*, with the white line or band on the underside of the secondaries narrow, or obsolescent.

148. *H. proximata* (Staudinger), *Iris* II. p. 137 (1889).

A single pair.

149. (?) *H. hurama* (Butler), *Trans. Ent. Soc. Lond.* p. 498 (1870) ;
id., *Lep. Exot.* p. 166. t. 59. f. 10 (1873).

It is with some doubt that I identify the specimens before me with Dr. Butler's species. The white band on the underside of the secondaries is much narrower than in the specimens he figures, and the black spot at the anal angle is almost entirely wanting. Otherwise the specimens agree very well with his description and figure.

DESCRIPTIONS OF NEW SPECIES OF BUTTERFLIES

CAPTURED BY MR. A. S. MEEK, AT MILNE BAY, BRITISH NEW GUINEA, IN THE MUSEUM OF THE HON. WALTER ROTHSCHILD, AT TRING.

By H. GROSE-SMITH, B.A., F.E.S., F.Z.S., ETC.

1. *Delias xelianthe* sp. nov.

♂. *Upperside*: both wings white. Anterior wings with the costal margin narrowly black, and the apex and outer margin more narrowly black than in *D. callistrate*, Gr.-Sm.,² but not dusted with grey scales as in that species: two subapical white streaks in the black area. Posterior wings, with the outer margin from the anal angle to a little above the discoidal nervule black, rather more narrowly so than in *D. callistrate*, and the inner edge of the black area more sharply defined than in that species.

Underside: anterior wings, with the costa, apex and outer margin much more narrowly black than in *D. callistrate*, with a row of spots in the black area, of which the three uppermost are pale yellow, and the others white. Posterior wings, with the basal third pale yellow, the black band as on the upperside, but much narrower than the black band of *D. callistrate*, a row of lunular spots in the black band, but four only in number, and more orange in colour.

♀. *Upperside*: both wings differ from the same sex of *D. callistrate* in being whiter and the dark areas blacker; the upper part of the black area on the anterior wings towards the apex does not approach so closely to the cell, and on the posterior wings the inner edge of the dark area is less curved.

Underside: both wings with the dark areas much blacker. On the anterior wings the subapical spots are yellow and white as in the *male*, instead of all yellow as in *D. callistrate*, and on the posterior wings the outer half is black with a submarginal row of narrow orange lunules extending from the apex to the anal angle, of which the second and third from the apex are almost obsolete; the basal third is pale